84-4283
AUG 29 '85
I19.42/4:84-4283

Gazetteer of Hydrologic Characteristics of Streams in Massachusetts--Taunton and Ten Mile River Basins and Coastal River Basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound

U.S. GEOLOGICAL SURVEY
Water-Resources Investigations Report 84-4283

NEWARK PUBLIC LIBRARY
APR 8 1986
U. S. GOVT. PUBS.
DEPOSITORY 378

Prepared in cooperation with the
COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
DIVISION OF WATER POLLUTION CONTROL

I 19.42/4:

GAZETTEER OF HYDROLOGIC CHARACTERISTICS OF STREAMS IN MASSACHUSETTS--TAUNTON AND TEN MILE RIVER BASINS AND COASTAL RIVER BASINS OF MOUNT HOPE BAY, NARRAGANSETT BAY, AND RHODE ISLAND SOUND

By S. William Wandle, Jr., and Gordon R. Keezer

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 84-4283

Prepared in cooperation with the

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

DIVISION OF WATER POLLUTION CONTROL

Boston, Massachusetts
1984

READEX

UNITED STATES DEPARTMENT OF THE INTERIOR

WILLIAM P. CLARK, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information write to:

U.S. Geological Survey
150 Causeway Street, Suite 1309
Boston, MA 02114

Copies of this report can be purchased from:

Open-File Services Section
Western Distribution Branch
U.S. Geological Survey
Box 25425, Federal Center
Denver, CO 80225
Telephone: (303) 236-7476

CONTENTS

	Page
Abstract	1
Introduction	1
Hydrologic data	4
Basin characteristics	4
Streamflow characteristics	8
Streamflow analysis	11
Streamflow data base	11
Daily flow statistics	12
Low-flow statistics	12
Summary	12
Selected references	36

ILLUSTRATIONS

		Page
Figure 1.	Map showing location of the Taunton and Ten Mile River basins and coastal river basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound	3
2-3.	Map showing location of gaging stations and low-flow partial-record stations in the:	
	2. Taunton River basin	5
	3. Ten Mile River basin and coastal river basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound	6
4-6.	Graph showing:	
	4. monthly discharges and extremes for Wading River near Norton, Mass. (site 47), during 1955-81	9
	5. flow-duration curve for Wading River near Norton, Mass. (site 47), during 1955-81	10
	6. low-flow frequency curve for Wading River near Norton, Mass. (site 47), during 1956-81	11

TABLES

		Page
Table 1.	Stream-order listing, selected drainage areas, and locations of subbasins within the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound	13
2.	Summary of daily flow records available in the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound	20
3.	Basin characteristics for stream-gaging stations in the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound	22
4.	Streamflow characteristics at selected stream-gaging stations	26
5.	Summary of 7-day low-flow characteristics, drainage area, and period of record for the partial-record stations and miscellaneous sites	32

CONVERSION FACTORS

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI Units
	Length	
inch (in)	25.4*	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
square mile (mi^2)	2.590	square kilometer (km^2)
	Flow	
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
cubic foot per second per square mile [$(ft^3/s)/mi^2$]	0.01093	cubic meter per second per square kilometer [$(m^3/s)/km^2$]
	Slope	
foot per mile (ft/mi)	0.1894	meter per kilometer (m/km)

Temperature

Temperature in degrees Fahrenheit (^oF) can be converted to degrees Celsius (^oC) as follows:

$$^oC = 5/9\ (^oF-32).$$

*Exact.

GAZETTEER OF HYDROLOGIC CHARACTERISTICS OF STREAMS IN MASSACHUSETTS—TAUNTON AND TEN MILE RIVER BASINS AND COASTAL RIVER BASINS OF MOUNT HOPE BAY, NARRAGANSETT BAY, AND RHODE ISLAND SOUND

By S. William Wandle, Jr., and Gordon R. Keezer

ABSTRACT

The study area includes streams draining the Taunton River (562 square miles), the Ten Mile River (53.1 square miles), and the minor streams flowing into Mount Hope Bay, Narragansett Bay, and Rhode Island Sound in southeastern Massachusetts, and adjacent areas of Rhode Island. Drainage areas, using the latest available 1:24,000 scale topographic maps, were computed for the first time for ungaged streams draining more than 3 square miles and were re-computed for data-collection sites.

Streamflow characteristics at 10 gaging stations were calculated using a new data base with daily flow records through 1981. These characteristics include annual and monthly flow statistics, duration of daily flow values, and the annual 7-day mean low flow at the 2-year and 10-year recurrence intervals. Seven-day low-flow statistics are presented for 44 partial-record sites, and the procedures used to determine the hydrologic characteristics of a basin are summarized. Basin characteristics representing 14 commonly used indices to estimate various streamflows are presented for selected gaged streams. This gazetteer will aid in the planning and siting of water-resources related activities and will provide a common data base for governmental agencies and the engineering and planning communities.

INTRODUCTION

Information on hydrologic characteristics, including drainage areas, frequency of low flows, and duration of daily flows, is necessary to plan and manage water-resources related activities. Governmental agencies and the engineering and planning community need streamflow and basin characteristics to satisfy requirements relative to waste assimilation, fisheries management, hydropower, land-use planning, stream-systems analysis, and water-resource development and management. No current hydrologic data base containing a comprehensive list of drainage areas, monthly flows, low-flow frequencies, and duration of daily flows is available for most of the Massachusetts stream systems. Drainage areas for selected sites are available where streamflow data are collected. Streamflow characteristics are presented in various reports, but these data, to be current, need to be re-analyzed using the latest available daily flow records.

In response to this need, a study was begun in 1980, in cooperation with the Massachusetts Division of Water Pollution Control, to analyze available streamflow and river-basin characteristics, and to compute subbasin drainage areas. This report is part of a series of gazetteers on the hydrologic characteristics of the major river basins in the State. Gazetteers are also available for the coastal river basins of the North Shore and Massachusetts Bay (Wandle, 1984a), Connecticut River basin (Wandle, 1984b), Hudson River basin (Wandle, 1984c), Merrimack River basin (Wandle and Fontaine, 1984), Housatonic River basin (Wandle and Lippert, 1984), Blackstone River basin (Wandle and Phipps, 1984), coastal river basins of the South Shore and Buzzards Bay (Wandle and Morgan, 1984) and Thames River basin (Wandle and LeBlanc, 1984). This report provides the first detailed listing of drainage areas and streamflow characteristics derived from daily flow records in the Taunton and Ten Mile River basins and coastal river basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound. The daily streamflow characteristics presented are an expansion and an update of those given in Willey and others (1978) and Williams and others (1973. Low-flow estimates are updated for low-flow sites in the Taunton River basin and are compiled from Willey and others (1978) for sites in the coastal river basins.

The study area (fig. 1) includes the Taunton and Ten Mile River basins and minor river basins draining into Mount Hope Bay, Narragansett Bay, and Rhode Island Sound in Bristol, Norfolk, and Plymouth Counties in southeastern Massachusetts. This area includes all or part of the following communities: Abington, Attleboro, Avon, Berkley, Bridgewater, Brockton, Carver, Dartmouth, Dighton, East Bridgewater, Easton, Fall River, Foxborough, Freetown, Halifax, Hanson, Holbrook, Kingston, Lakeville, Mansfield, Middleborough, New Bedford, Norfolk, North Attleborough, Norton, Pembroke, Plainville, Plymouth, Plympton, Raynham, Rehoboth, Rochester, Rockland, Sharon, Somerset, Stoughton, Seekonk, Swansea, Taunton, Westport, Walpole, West Bridgewater, Weymouth, Whitman, and Wrentham.

Streamflow characteristics presented for the 10 continuously gaged streams are based upon a new sample of daily flow records in comparison to flow records used in Higgins (1967), Knox and Soule (1949), Male and Ogawa (1982), Willey and others (1978), and Williams and others (1973). Streamflow records through the 1981 water year were available for this analysis. For each site, records were selected to represent a flow regime influenced by fairly constant river basin conditions (Wandle, 1983).

Drainage areas were computed for the first time for ungaged streams draining more than 3 mi^2 and were re-computed for data-collection sites. Drainage divides, as delineated on the latest available 1:24,000 scale topographic quadrangle maps (Wandle and Frimpter, 1982; Brackley and Wandle, 1983), were used to calculate drainage areas. Drainage areas for most of the long-term gaging stations in earlier reports were computed using the drainage divides as outlined on 1:31,680 or 1:62,500 scale topographic quadrangle maps.

Streamflow data used in this study are a part of the historic streamflow data collected under agreements with State and Federal agencies and the U.S. Geological Survey. Most of the low-flow discharge measurements used in determining low-flow estimates at partial-record sites were collected during the water-resources investigations of the Taunton River basin (Williams and others, 1973) and the coastal basins of southeastern Massachusetts (Willey and others, 1978). A file of basin characteristics was created during an evaluation of available streamflow data in central New England (Johnson, 1970). This file is an expansion of the characteristics abstracted by Langbein and others (1947), and by Benson (1962). Basin characteristics were updated and additional characteristics were entered as part of a study to define floodflow characteristics of small streams (Johnson and Tasker, 1974; Wandle, 1982). The hierarchical stream list was compiled by the Massachusetts Division of Water Pollution Control and the Massachusetts Division of Fisheries and Wildlife (Halliwell and others, 1982).

Data tabulated include drainage areas, and basin and streamflow characteristics for gaging stations, including annual and monthly flow statistics, duration of daily flow values, and the annual 7-day mean low flow at the 2-year and 10-year recurrence intervals. Seven-day low-flow statistics for partial-record sites are also presented. An explanation of each procedure to determine the streamflow and basin characteristics is provided.

The authors thank the many persons who have kindly given time, information, and guidance during this study. Particular thanks are given to persons in the Geological Survey who assisted in the data collection and in the preparation of this report.

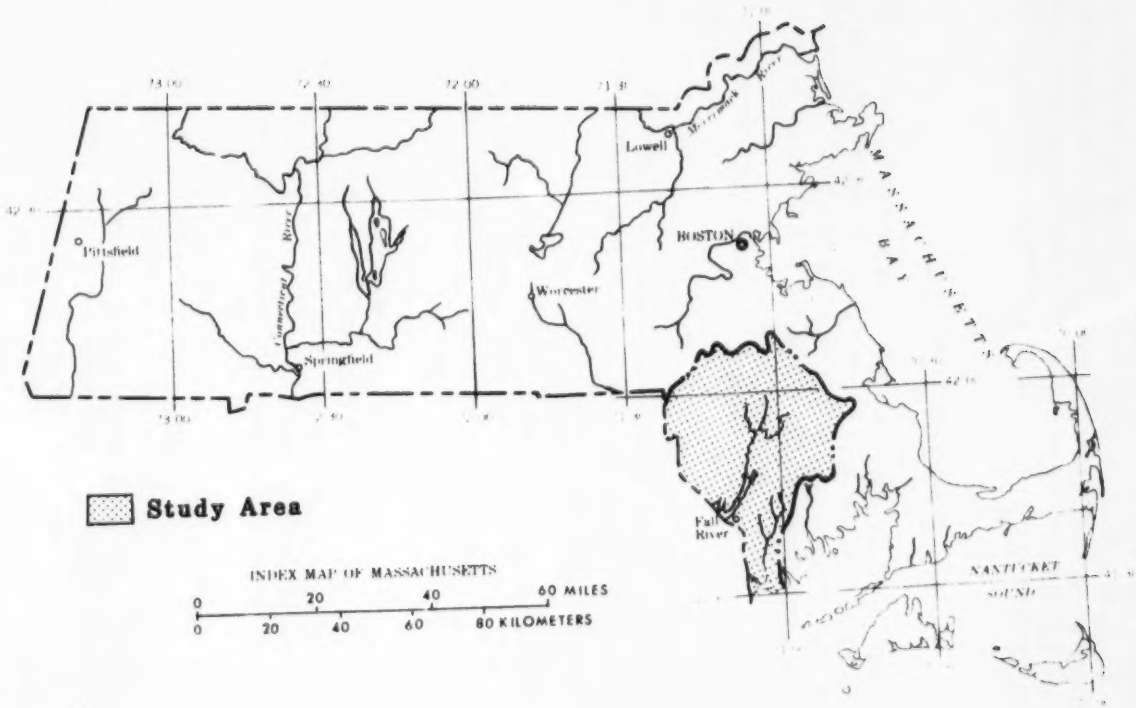

Figure 1.--Location of the Taunton and Ten Mile River basins and coastal river basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound

HYDROLOGIC DATA

Hydrologic characteristics are represented by various physical, climatic, and streamflow indices of a river basin. These characteristics can be determined either from available maps by following standardized procedures or from historic streamflow records.

Basin characteristics are indices of the physiography of the basin or of the climate prevailing over the basin and are measured on topographic quadrangle or climatic maps. Streamflow characteristics are computed from continuous records of daily flow or from a set of measurements during the occurrence of a specific event. Streamflow and basin characteristics are needed in modeling stream quality, assessing water-resources conditions, analyzing impact of man's activities, and defining relationships to estimate flows or stream-quality parameters at ungaged sites.

Basin Characteristics

Drainage area is one of the most important variables in any hydrologic investigation or in the design of riverine structures because it is the most significant variable in the northeast that influences all streamflow except perhaps low flow in some regions. The physical boundary for many water-related studies corresponds to the limits for the drainage area upstream from the site.

For this study, drainage areas listed in table 1 (at the end of the report) were determined for the following sites:

1. Survey data-collection sites shown in figures 2 and 3. These sites include continuous-record gaging stations given in table 2 (at the end of the report), low-flow partial-record stations, miscellaneous sites, and water-quality stations.

2. Locations where the drainage area is greater than 3 mi^2.

3. Successive sites along a stream where the area between sites is at least 6 mi^2 on tributary streams and 10 mi^2 on the main-stem stream.

The drainage basin divides for these sites were delineated on the latest available 1:24,000 scale topographic quadrangle maps. Subbasin drainage divides are shown in the series of statewide reports, "Drainage Divides, Massachusetts." The study area is covered by two reports in this series—Taunton River basin and southeast coastal basins (Wandle and Frimpter, 1982) and Ipswich and lower Merrimack River basins and northeast coastal basins (Brackley and Wandle, 1983).

The subbasin drainage areas given in table 1 are indexed to the Massachusetts stream inventory prepared by the Massachusetts Division of Water Pollution Control and the Massachusetts Division of Fisheries and Wildlife (Halliwell and others, 1982) with some modification. Drainage areas were computed for sites meeting one of the three criteria mentioned above. The entire stream listing is included as a reference for stream order. This hierarchical listing begins at the mouth of a major stream and proceeds upstream with tributary streams indented under the main-stem stream. This order is followed to list all named streams. Unnamed tributaries are included to maintain the hierarchy. The reader is referred to the inventory of rivers and streams report by Halliwell and others (1982) for a more detailed explanation.

The basin characteristics listed below are included because they represent indices that would remain reasonably stable over a planning period. They can be used in predictive surface-water models to assess impacts of proposed developments. The usefulness of these characteristics to explain the variability of various streamflow events has been demonstrated in hydrologic analyses (Thomas and Benson, 1970) and they can be measured readily from available maps. The 14 basin indices given in table 3 (at the end of the report) were computed according to the procedures described below. The indices for elevation, storage, lake area, and forest can be computed by the grid method which is explained after all the procedures are described.

Figure 2.--Location of gaging stations and low-flow partial-record stations in the Taunton River basin

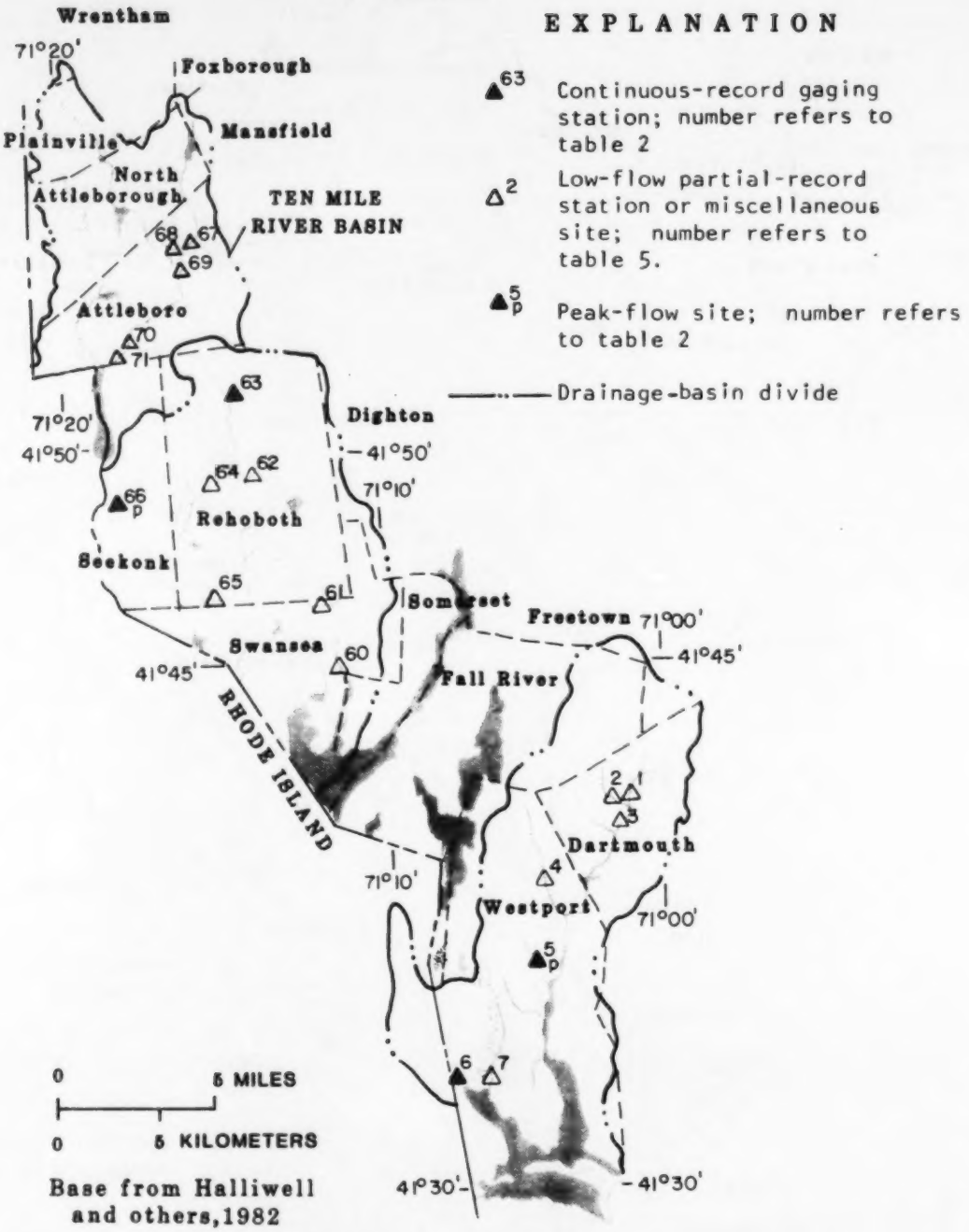

Figure 3.--Location of gaging stations and low-flow partial-record stations in the Ten Mile River basin and coastal river basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound

1. Drainage area—Area, in square miles, as measured on the most recent 1:24,000 scale topographic quadrangle maps. Drainage area, as defined in the "National Handbook of Recommended Methods for Water-Data Acquisition" (U.S. Geological Survey, 1977), is "...the area of a river basin, measured in a horizontal plane, that is enclosed by a topographic divide such that direct surface runoff from precipitation normally would drain by gravity into the river basin.". Drainage area boundary lines are traced on topographic maps along divides indicated by contour elevations, starting at the point on the stream for which the drainage area is desired. These lines are drawn to cross a contour at right angles. Interpolation between contours may be indicated by reference to trails, old roads, or firebreaks in forested areas, all of which frequently follow drainage divides. Detailed information may also be obtained from highway or street profiles, from examination of aerial photographs, and from ground reconnaissance. Subareas within each quadrangle map were computed with an electronic digitizer using the procedures of the U.S. Federal Inter-Agency River Basin Committee (1951) as a guide. The coefficients to compute square miles from digitizer units were calculated using the known area of each 7.5-minute quadrangle or of the appropriate 2.5-minute quadrilaterals. Drainage areas for the subbasins were computed by summing the contributing areas.
2. Slope--Main-channel slope, in feet per mile, determined from elevations at points 10 percent and 85 percent of the distance along the main channel from the gaging station to the basin divide.
3. Length—Main-channel length, in miles, from the gaging station to the basin divide, as measured with dividers set to 0.1 mile or with a map measurer.
4. Elevation--Mean basin elevation, in feet above sea level, measured on topographic maps by laying a grid over the map.
5. Storage—Area of lakes, ponds, and marshes, in percent of total drainage area, measured by planimetering or by using a transparent grid. The marsh area includes the area of wooded marshes and marshes as defined by the appropriate topographic quadrangle map symbol. Storage area is the total area of all the lakes, ponds, and marshes expressed as a percentage of the total drainage area.
6. Lake area—Area of lakes and ponds, in percent of the drainage area, determined by the grid method.
7. Forest--Area of forest, in percentage of the drainage area, determined from the forest cover as shown on the topographic map with the green woodland overprint using the grid method.
8. Soil—Soil index, in inches, represents the value of potential maximum infiltration, during an annual flood, under average soil-moisture conditions. This characteristic, provided by the U.S. Soil Conservation Service (Dr. Benjamin Isgur, written commun., 1970), is a function of the soil and cover conditions in the basin. The index was computed from the runoff curve number following procedures in U.S. Department of Agriculture (1972).
9. Latitude—Latitude of stream-gaging station, in decimal degrees, determined by manual measurement.
10. Longitude—Longitude of stream-gaging station, in decimal degrees, determined by manual measurement.
11. Precipitation—Mean-annual precipitation, in inches, determined from the isohyetal map in Knox and Nordenson (1955). The variation in mean-annual precipitation is shown in more detail in this map than in more recent sources.
12. Precipitation intensity--Maximum 24-hour rainfall, in inches, having a recurrence interval of 2 years. This characteristic was determined from U.S. Weather Bureau (1959b).
13. Snowfall--Average total seasonal snowfall, in inches, from an isohyetal map in Lautzenheiser (1969).
14. January temperature—Minimum January temperature, in degrees Fahrenheit, determined from U.S. Weather Bureau (1959a).

Several basin characteristics were measured following the grid method by using transparent grids to compute area or an average contour value. Storage area is determined by randomly placing the grid over the water and marsh area and counting squares. If the water and marsh area is large enough (about 30 squares), the number of grid intersections within the storage area are counted. The storage area then is computed as the product of the square size and the number of grid intersections. To measure a contour value such as elevation, the grid spacing is selected to give at least 25 intersections within the basin boundary. The elevation at each grid intersection is determined and an average is computed. The percentage of a variable that is extensive in a drainage basin, such as forest cover, can be easily measured by counting the number of grid intersections occurring over the forested area, multiplying by 100, and dividing by the number of grid intersections within the basin.

Streamflow Characteristics

Historic daily flow records available in the Taunton River basin and coastal basins of Narragansett Bay and Rhode Island Sound were used to compute daily, monthly, and annual flow characteristics. A summary of these records is given in table 2 and the location of streamflow sites is shown in figures 2 and 3. These flow data were collected as part of the Survey's nationwide data-collection network through agreements with State and Federal agencies. Records of daily flow are available from the Survey's National Water Data Storage and Retrieval System (WATSTORE). This water-data computer processing system consists of several files containing data grouped by common characteristic and data-collection frequency.

The WATSTORE system includes site identification, daily values files, and computer programs that produce streamflow statistics. Hydrologic-data files are maintained for (1) parameters measured on a daily or continuous basis, such as streamflow values, river stages, water temperatures, specific-conductance values, and ground-water levels; (2) annual peak values for streamflow and stage; (3) chemical analyses for surface- and ground-water sites; and (4) ground-water site inventory, including location, identification and geohydrologic characteristics. The data-processing, storage, retrieval, and analysis capabilities of WATSTORE are described in the system user's guide compiled by Hutchison (1975). Information on the availability of data analyses may be obtained from: U.S. Geological Survey, 150 Causeway Street, Suite 1309, Boston, MA 02114.

A brief description of the streamflow statistics computed using the WATSTORE system is included below. Streamflow characteristics representing annual, monthly, and daily flow statistics were selected for this analysis because they are useful in planning and design studies in this region. The streamflow statistics computed following the procedures given below are listed in table 4 (at the end of the report).

Annual and monthly flow characteristics (means and standard deviations) for 10 gaging stations were computed with the "Daily Values Monthly and Annual Statistics" computer program W4422 (Price and Meeks, 1977) using observed daily flow records. The maximum and minimum, monthly means (fig. 4 and table 4) were obtained from output provided by this program. The monthly hydrograph for Wading River near Norton is shown in figure 4.

Characteristics of the flow-duration curve (the daily flow exceeded 99, 95, 90, 75, 70, 50, 25, and 10 percent of the time) were computed for 10 gaging stations by means of computer program A969, "Daily Values Statistics" (Meeks, 1977). An example of a flow-duration curve for Wading River near Norton is given in figure 5. Low-flow characteristics (annual 7-day mean low flows at the 2-year and 10-year recurrence intervals 7Q2 and 7Q10, respectively) were also calculated for six gaging stations by program A969. In this program, a log-Pearson Type III distribution is fitted to a set of observed annual 7-day mean low flows to obtain coordinates of the computed low-flow frequency curve. If the log-Pearson Type III curve did not adequately fit a plot of the observed data, especially in the low end, then a graphical curve was drawn. The graphical frequency curve was used to interpret the observed data when necessary because a graphical curve is the basic curve to use in analyzing the frequency of annual low flows according to Riggs (1971, 1972). The frequency curve for Wading River near Norton is shown in figure 6.

Additional flow data, including flood-frequency analyses, are available from WATSTORE. Peak discharges for selected recurrence intervals for 82 sites in Massachusetts are given in Wandle (1982).

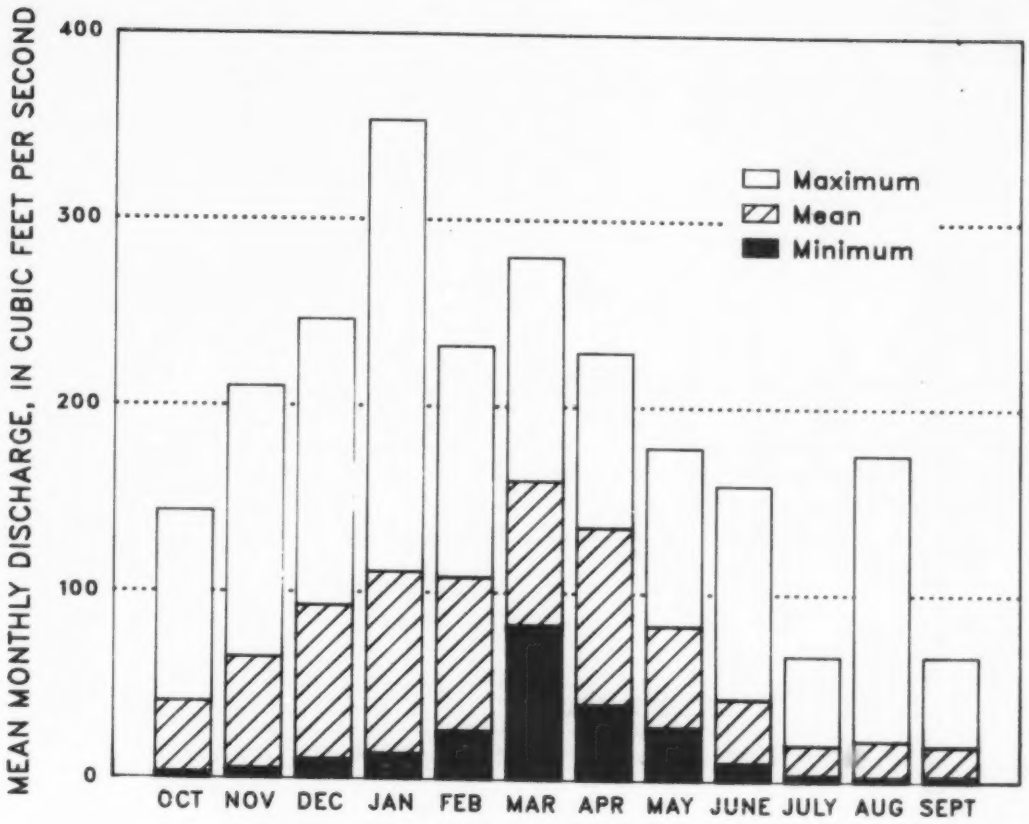

Figure 4.--Monthly discharges and extremes for Wading River near Norton, Mass. (site 47), during 1935-81

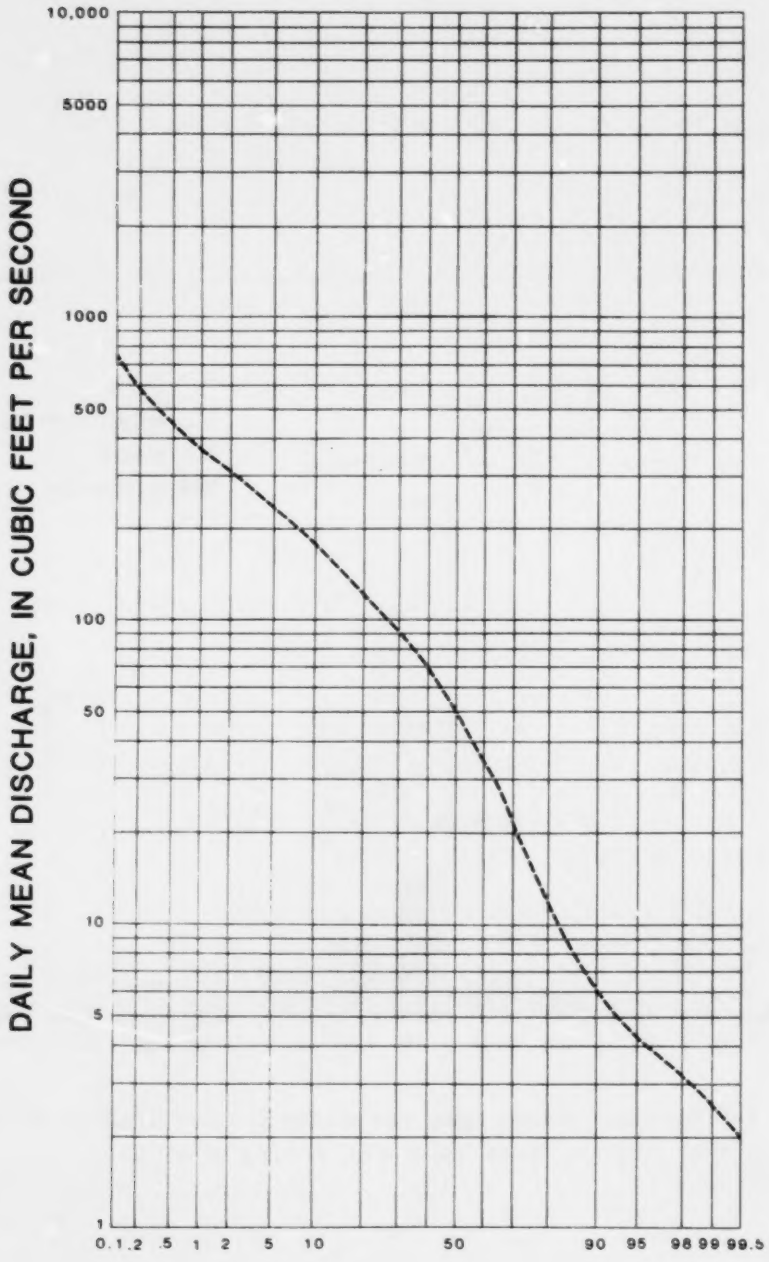

Figure 5.--Flow-duration curve for Wading River near Norton, Mass. (site 47), during 1955-81

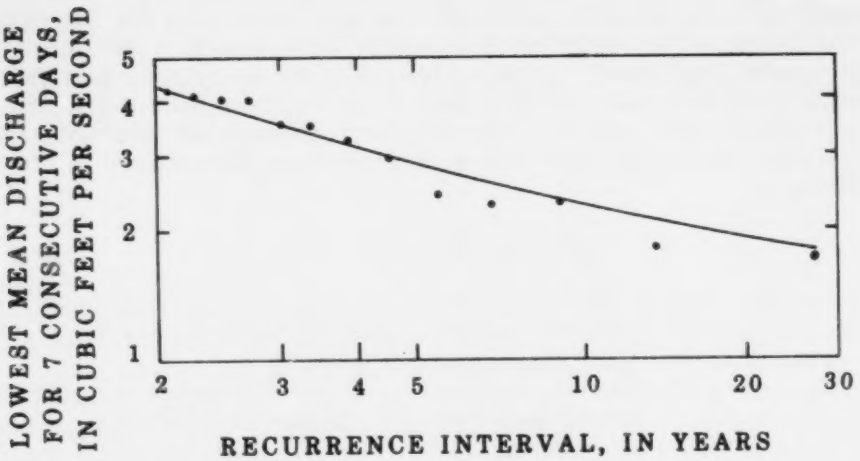

Figure 6. Low-flow frequency curve for Wading River near Norton, Mass. (site 47), during 1956-81

Characteristics of low flow were also determined at low-flow partial-record stations where measurements of discharge, rather than a continuous daily flow record, were available. This estimating technique is briefly described in the section on Streamflow Analysis. The 7-day low-flow statistics were developed from discharge measurements made during periods of base runoff. Base runoff is defined (Langbein and Iseri, 1960) as "the sustained or fair weather runoff. In most streams, base runoff is composed largely of ground-water effluent." Base runoff usually occurs in most Massachusetts streams during the summer or early fall after 5 to 7 consecutive days without rainfall.

STREAMFLOW ANALYSIS

Streamflow Data Base

Systematic records of daily streamflow have been collected since at least 1930 in the Taunton River basin. Streamflow records have been collected in the coastal basins of Rhode Island Sound and Narragansett Bay on Adamsville Brook and on the West Branch Palmer River, respectively. The location and period of record for these gaging stations are given in table 2. Streams within the Ten Mile River basin or the coastal basins of Mount Hope Bay have not been monitored for daily flow information.

Discharge measurements were made at 44 low-flow partial-record sites during the water-resources investigations of the Taunton River basin (Williams and others, 1973) and coastal basins of southeastern Massachusetts (Willey and others, 1978). Measurements were also collected as part of the Massachusetts low-flow network at four sites from 1978 to 1981 and at nine sites during 1965.

Flow characteristics are useful in resource management and design studies if these variables represent a particular regulated flow sequence or the natural flow regime that is expected to occur in the future. A valid streamflow analysis is based upon flow records during a period of relatively constant river-basin conditions.

Daily Flow Statistics

The available systematic daily flow records for 11 gaging stations were reviewed to select a data base for statistical analysis. Impacts of reservoirs, diversions, regulation, and withdrawals for public supplies on streamflow were assessed using information on stream regulation found in the series of water-resources data reports issued annually (see U.S. Geological Survey, 1980, for an example) and in Knox and Soule (1949). Streamflow records for 10 gaging stations were selected that represent a flow regime influenced by fairly constant river-basin conditions (Wandle, 1983). The record length used in this analysis is given in table 4. Low flow, monthly flow, and flow-duration characteristics given in table 4 were derived from the observed streamflow records at each station and were not adjusted for regulation or diversion. These daily streamflow characteristics were computed following procedures summarized in the section on streamflow characteristics.

Low-Flow Statistics

Continuous streamflow records are not necessary to estimate low-flow characteristics at sites. According to Riggs (1972) selected base-flow measurements rather than a continuous daily flow record can define the low-flow characteristics at a site.

Low-flow partial-record stations are operated to collect discharge measurements when streamflow is composed largely of ground-water runoff. These low-flow sites are selected on streams where flow is expected to occur during a significant dry spell and where the flow is not affected by artificial regulation. Base-flow measurements to define a relation with concurrent gaged flows are obtained over several low-flow periods.

A relation is developed with the base-flow measurements and the concurrent daily mean flows at a nearby long-record gaging station (index station). The 7-day low-flow statistics (7Q2 and 7Q10) for the site are determined from this relation using the appropriate low-flow statistics for the gaged stream. This estimating technique is explained in more detail by Riggs (1972).

An analysis of the 7-day low flows for long-term gaging stations indicated little difference between values computed for the analyses developed by Willey and others (1978) and for the current period. Low-flow statistics for all except one partial-record site in the coastal river basins are from Willey and others (1978) because additional low-flow measurements were unavailable and because the gaged statistics did not significantly change. The low-flow relationship at Rocky Run near Rehoboth was re-defined using the recent low-flow measurements.

Low-flow statistics for 44 sites in the study area are summarized in table 5 (at the end of the report). The low-flow statistics are representative of the hydrologic regime during the data-collection period. Seven-day, 2-year, and 10-year low flows ranged from 0.01 to 0.39 and from 0.0 to 0.21 $(ft^3/s)/mi^2$, respectively, at these sites. Index stations were nearby long-term gaging stations in the coastal river basins and Charles River at Dover and Wading River at West Mansfield in the Taunton River basin. These values were computed following the procedures mentioned above.

SUMMARY

Drainage areas were re-computed for data-collection sites and were computed for the first time for ungaged streams draining greater than 3 mi^2. Basin characteristics for drainage area, slope, length, elevation, storage, lake area, forest, soil, latitude, longitude, precipitation, precipitation intensity, snowfall, and January minimum temperature are provided for the 15 gaged sites. Computer programs A969 and W4422 were used to determine daily flow statistics including annual and monthly flows, duration of daily flows, and 7-day low-flow values. Seven-day, 2-year, and 10-year low flows ranged from 0.01 to 0.39 and from 0.0 to 0.21 $(ft^3/s)/mi^2$, respectively, at the 44 partial-record stations.

Techniques used to compute basin and streamflow characteristics of a river basin are summarized. This gazetteer contains a comprehensive listing of hydrologic characteristics that should prove useful to those concerned with water-resources activities.

Table 1.--Stream-order listing, selected drainage areas, and locations of subbasins within the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound

[Sites with streamflow information listed in tables 2, 4, or 5 are marked with an asterisk. The hierarchical listing is modified from Halliwell and others, 1982. Drainage areas are shown for sites as explained in the section on basin characteristics. These areas are not adjusted for manmade changes in the flow system. Streams entirely in adjacent states are underlined and are included in the list where necessary to maintain the stream order.]

Stream name	Location	Drainage area, in square miles
	TAUNTON RIVER BASIN	
Taunton River	Interstate Route 195	562
Quequechan River	Mouth	30.5
Sucker Brook	Mouth	4.57
Stony Brook	State Route 117	3.65
Blossom Brook		
King Phillip Brook		
Queen Gutter Brook		
Steep Brook		
The Creek		
Labor in Vain Brook		
Taunton River tributary	North Main Street	*.23
Assonet River	Mouth	35.1
Rattlesnake Brook	South Main Street	*4.23
Terry Brook		
Mill Brook		
Assonet River	Dam upstream from State Route 79	21.9
Quaker Brook	Bryant Street	*1.95
Assonet River	State Route 79	*16.3
Cedar Swamp River		
Holloway Brook	Pickens Street	*1.17
Muddy Cove Brook		
Segreganset River	Mouth	14.9
Sunken Brook		
Segreganset River	50 feet upstream from Center Street	*10.6
Threemile River	Mouth	85.1
Threemile River	800 feet upstream from Warner Boulevard	*84.3
Threemile River	U.S. Route 44	*81.4
Fall Brook		
Threemile River tributary	State Route 140	*.51
Unnamed tributary		
Meadow Brook		
Birch Brook		
Wading River	Mouth	43.7
Wading River	200 feet downstream from State Route 140	*43.3
Goose Branch		

Table 1.--Stream-order listing, selected drainage areas, and locations of subbasins within the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound (Continued)

Stream name	Location	Drainage area, in square miles
	TAUNTON RIVER BASIN (Continued)	
Taunton River (Continued)		
Threemile River (Continued)		
Wading River	Upstream from Goose Branch	38.7
Unnamed tributary		
Chartley Brook	100 feet downstream from Chartley Pond outlet	*6.46
Chartley Brook	Wilmarth Street	*1.40
Wading River	300 feet downstream from State Route 123	29.2
Unnamed Brook	Mouth	2.17
Wading River	Upstream from unnamed Brook	26.3
Hodges Brook	Oak Street	*3.72
Wading River	200 feet downstream from Balcolm Street	*19.5
Unnamed tributary	Lake Mirimichi outlet	12.1
Unnamed tributary	Mirimichi Street at Lake Mirimichi	5.33
Unnamed tributary	Turnpike Lake outlet	4.30
Old Mill Brook		
Hawthorne Brook	Mouth	1.66
Unnamed tributary	Mouth at Lake Mirimichi	5.82
Unnamed tributary	0.3 mile downstream from Rabbit Hill Pond	4.53
Unnamed tributary	0.47 mile upstream from unnamed road	.06
Wading River	Spruce Street	5.21
Rumford River	Mouth	22.3
Rumford River	Cabot Pond outlet	12.0
Robinson Brook	State Route 140	*2.60
Henkes Brook		
Rumford River	Unnamed road upstream from Cocasset Street	*5.09
Billings Brook		
Taunton River	Upstream from Threemile River	368
Cobb Brook	Mouth	2.47
Mill River	Whittenton Street	*41.1
Snake River	Mouth at Lake Sabbatia	38.8
Mulberry Meadow Brook	Plain Street	*12.0
Mulberry Meadow Brook	0.1 mile upstream from Ward Pond inlet	9.03
Unamed tributary		
Beaver Brook		
Mulberry Meadow Brook	Upstream from unnamed tributary	5.73
Poquanticut Brook	Chestnut Street	*4.46
Poquanticut Brook	Rockland Street	3.17
Canoe River	Mouth	18.8
Canoe River	Plain Street	*18.3
Canoe River	Unnamed Pond outlet upstream from Mill Street	10.44
Canoe River	Private road	*1.62

Table 1.--Stream-order listing, selected drainage areas, and locations of subbasins within the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound (Continued)

Stream name	Location	Drainage area, in square miles
	TAUNTON RIVER BASIN (CONTINUED)	
Taunton River	State Route 140	315
Forge River	South Street West	*9.23
Unnamed tributary		
Pine Swamp Brook	Wilbur Pond outlet	5.16
Dam Lot Brook	South Street West	*2.97
Cotley River	Middleboro Avenue	*7.53
Cotley River	Macomber Street	2.96
Taunton River	0.26 mile upstream from Cotley River	291
Furnace Brook		
Spring Brook		
Thompson Brook		
Poquoy Brook	Vernon Street	*8.23
Puddingshear Brook		
Taunton River	100 feet upstream from Poguoy Brook	27.1
Bassett Brook		
Snows Brook	Private road 0.5 mile upstream from mouth	2.64
Snows Brook	Cross Street	*1.37
Otis Pratt Brook		
Sawmill Brook		
Taunton River	1 mile upstream from Sawmill Brook	*258
Purchade Brook	Plymouth Street	*3.07
Nemasket River	Murdock Street	*69.4
Beaverdam Brook		
Fall Brook	Wood Street	*9.32
Shaving Brook		
Stony Brook		
Woods Brook		
Shorts Brook		
Nemasket River	Vaughan Street	49.6
Bates Brook		
Long Pond River		
Hathaway Brook		
Fall Brook	200 feet downstream from dam on County Road	*13.1
Fall Brook	Chace Road	5.50
Tamett Brook		
Spring Brook		
Snipatuit Brook		
Black Brook	100 feet upstream from Marion Road	*7.43
Millers Necks Brook		
Taunton River	Summer Street	*182
Spring Brook		
Beaver Brook		

Table 1.—Stream-order listing, selected drainage areas, and locations of subbasins within the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound (Continued)

Stream name	Location	Drainage area, in square miles
TAUNTON RIVER BASIN (CONTINUED)		
Taunton River (Continued)		
Winnetuxet River	Mouth	37.8
Bartlett Brook		
White Oak Island Brook		
Danson Brook		
Winnetuxet River	River Street	*35.7
Raven Brook	Wood Street	*3.58
Palmer Mill Brook		
Colchester Brook		
Whetstone Brook		
Annasnappet Brook		
Muddy Pond Brook		
Doten Brook		
Matfield River		
Satucket River	100 feet downstream from mill	*34.8
Black Brook		
Poor Meadow Brook	State Route 27	*14.6
Shumatuscacant River	State Route 14	*10.3
Stream River		
Shumatuscacant River	State Route 123	3.37
Satucket River	Pond Street	13.4
Unnamed tributary		
Stump Brook		
White Oak Brook		
Stetson Brook		
Matfield River	State Route 18	*40.5
Unnamed tributary		
Meadow Brook	Central Street	*7.32
Meadow Brook	100 feet north of Union Street	*6.22
Meadow Brook	Harvard Street	3.95
Meadow Brook tributary	Auburn Street	*.94
Matfield River	Union Street	*30.9
Salisbury Plain River		
Edson Brook		
French Brook		
Trout Brook	Elliot Street	5.88
Cary Brook		
Malfardar Brook		
Searles Brook		
Salisbury Brook	Cross Pond outlet	6.16
Unnamed tributary		
Lovett Brook		
Beaver Brook		

Table 1.—Stream-order listing, selected drainage areas, and locations of subbasins within the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound (Continued)

Stream name	Location	Drainage area, in square miles
	TAUNTON RIVER BASIN (CONTINUED)	
Taunton River (Continued)		
Matfield River (Continued)		
Beaver Brook	Belmont Street	*8.90
Beaver Brook	Cleveland Pond outlet	3.36
Town River	State Route 18	*55.6
South Brook		
West Meadow Brook	South Elm Street	6.25
Black Betty Brook		
West Meadow Brook	West Chestnut Street	*1.99
Hockomock River	State Route 106	*20.5
Coweeset Brook		
Queset Brook	Longwater Pond outlet	7.47
Whitman Brook		
Daley Brook		
Dorchester Brook	20 feet upstream from Pearl Street	*4.71
Black Brook	State Route 106	5.86
	TEN MILE RIVER BASIN	
Ten Mile River	Pawtucket Avenue, R.I.	*53.1
Coles River	Newman Avenue	3.09
Ten Mile River	State Route 15	43.7
Ten Mile River	Central Avenue	42.5
Sevenmile River	Mouth	12.8
Sevenmile River	Old Post Road	
Fourmile Brook		
Sevenmile River	Old Post Road	4.10
Ten Mile River	Inlet pond at Mass.-R.I. State line	29.2
Ten Mile River	Railroad bridge	*27.7
Ten Mile River	300 feet upstream from Hebronville Dam	*27.6
Speedway Brook		
Ten Mile River	State Route 123	*19.6
Bungay River	0.5 mile upstream from mouth	*7.3
Ten Mile River	Upstream from Bungay River	11.6
Scotts Brook		
Ten Mile River	Road 0.25 mile downstream from County line	3.98
Ten Mile River	County line	3.89
Ten Mile River	State Route 106	3.33

Table 1.--Stream-order listing, selected drainage areas, and locations of subbasins within the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound (Continued)

Stream name	Location	Drainage area, in square miles
COASTAL RIVER BASINS OF NARRANGANSETT BAY		
Barrington River (R.I.)		
Runnins River	School Street	9.39
Runnins River	Pleasant Street	*4.27
Palmer River	U.S. Route 6	47.5
Torrey Creek		
Rocky Run	Mason Street, 0.2 mile upstream from mouth	11.0
Rocky Run	Davis Street	*7.37
Rocky Run	Martin Street	5.69
Oak Swamp Brook		
Palmer River	Reed Street (200 feet downstream from Shad Factory Pond outlet)	30.9
Clear Run Brook		
Palmer River	Summer Street	*26.8
Fullers Brook		
Beaverdam Brook		
Rumney Marsh Brook		
Carpenter Brook		
West Branch Palmer River	Homestead Avenue	*4.35
Wolf Plain Brook		
Bliss Brook		
East Branch Palmer River	State Route 118	*12.3
Bad Luck Brook		
East Branch Palmer River	U.S. Route 44	5.85
COASTAL RIVER BASINS OF MOUNT HOPE BAY		
Kickamuit River	Road at inlet of Warren Reservoir	4.80
Kickamuit River	Poverty Corner Road	2.20
Heath Brook		
Cole River	State Route 103	13.4
Cole River	Road at inlet of Milford Pond	10.5
Cole River	Hortonville Road	*7.80
Cole River	Unnamed pond outlet downstream from Baker Pond	4.88
Lee River	Mouth	6.73
Lewin Brook	Stevens Road	*2.91

Table 1.—Stream-order listing, selected drainage areas, and locations of subbasins within the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound (Continued)

Stream name	Location	Drainage area, in square miles
COASTAL RIVER BASINS OF RHODE ISLAND SOUND		
Westport River		
West Branch Westport River	Mouth	17.4
Dunhams Brook		
Angeline Brook	Cornell Road	*3.26
Adamsville Brook (R.I.)	0.4 mile upstream from Grays Mill Pond outlet, Rhode Island	*8.01
East Branch Westport River	Hix Bridge Road	51.7
Horseneck Channel		
Snell Creek		
Allen Creek		
Kirby Brook	Drift Road	*3.69
Bread and Cheese Brook	State Route 177	*9.26
Bread and Cheese Brook	Westbound lane of Interstate Route 195	3.51
East Branch Westport River	0.3 mile upstream from Forge Pond outlet	28.0
Shingle Island River	Hixville Road	*10.1
Unnamed tributary		
Copicut River	Old Fall River Road	*8.68
Miller Brook		
Copicut River	Quanapoag Road	3.43
Shingle Island River	Old Fall River Road	*8.59
Simon Brook		

Table 2.—Summary of daily flow records available in the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound

Number in figures 2 and 3	Station number	Station name	Location	Period of record	Remarks
		COASTAL RIVER BASINS OF RHODE ISLAND SOUND			
5	01105950	Kirby Brook near Head of Westport, Mass.	Drift Road	1964-74	Peak-flow site discontinued.
6	01106000	Adamsville Brook at Adamsville, R.I.	0.4 mile upstream from Grays Mill Pond outlet	1941-78	Discontinued. Water-quality records for 1973-74.
		TAUNTON RIVER BASIN			
10	01106485	Meadow Brook tributary near Whitman, Mass.	Auburn Street	1967-74	Peak-flow site discontinued.
13	01106500	Matfield River at Elmwood, Mass.	State Route 18	1959-60	Some diurnal fluctuation at low flow. Slight regulation by ponds. Small diversions to basin for water supply of several towns supplied by Brockton.
15	01106900	Poor Meadow Brook at South Hanson, Mass.	State Route 27	1959-60	Small diversion to basin for Whitman water supply.
18	01107000	Dorchester Brook at Brockton, Mass.	20 feet above Pearl Street	1963-74	Discontinued.
24	01107200	Taunton River at Titicut near Brockton, Mass.	Summer Street	1921-25	Do.
27	01107400	Fall Brook near Middleborough, Mass.	Wood Street	1967	Do.
30	01108000	Taunton River at State Farm, near Bridgewater, Mass.	1 mile upstream from Sawmill Brook	1930-75	Diversions above station for municipal supplies. Regulated by reservoirs and small powerplants.
31	01108100	Snows Brook near Bridgewater, Mass.	Cross Street	1964-74	Peak-flow site discontinued.

Table 2.--Summary of daily flow records available in the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound (Continued)

Number in figures 2 and 3	Station number	Station name	Location	Period of record	Remarks
		TAUNTON RIVER BASIN (CONTINUED)			
43	01108500	Wading River at West Mansfield, Mass.	200 feet downstream from Balcolm Street	1954-81	Regulated by Lake Mirimichi and other lakes and reservoirs. Diversion for municipal supply of Attleboro and small diversions for other municipal supplies.
47	01109000	Wading River near Norton, Mass.	200 feet downstream from State Route 140	1926-81	Regulated by lakes and reservoirs. Diversions for municipal supply of Attleboro and small diversions for other municipal supplies.
51	01109050	Threemile River tributary near Oakland, Mass.	State Route 140	1964-74	Peak-flow site. Discontinued.
53	01109060	Threemile River at North Dighton, Mass.	800 feet downstream from Warner Boulevard	1967-81	Diversions to and from from basin may be compensating.
54	01109070	Segregansett River near Dighton, Mass.	50 feet upstream from Center Street	1967-81	Occasional regulation by ponds. Diversion for Dighton Water District.
55	01109075	Holloway Brook near Myricks, Mass.	Pickens Street	1967-74	Peak-flow site discontinued.
55	01109085	Quaker Brook near Myricks, Mass.	Bryant Street	1967-74	Do.
59	01109100	Taunton River tributary near Fall River, Mass.	State Route 79	1964-81	Peak-flow site.
		COASTAL BASINS OF NARRAGANSETT BAY			
63	01109200	West Branch Palmer River near Rehoboth, Mass.	Homestead Ave.	1963-74	Peak-flow site.
66	01109270	Runnins River at Seekonk, Mass.	Pleasant Street	1967-81	Do.

Table 3.--Basin characteristics for stream-gaging stations in the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound

Basin characteristics	Station name and site number				
	Kirby Brook near head of Westport, Mass.	Adamsville Brook at Adamsville, R.I.	Meadow Brook tributary near Whitman, Mass.	Matfield River at Elmwood, Mass.	Poor Meadow Brook at South Hanson, Mass.
	(5)	(6)	(10)	(13)	(15)
Area, in square miles	3.69	8.01	0.94	40.5	14.6
Slope, in feet per mile	38.1	32.2	49.4	—	—
Length, in miles	3.2	6.0	1.22	—	--
Elevation, in feet	160	140	110	—	—
Storage, in percent	.0	11.5	—	--	--
Lake area, in percent	.0	.12	.0	—	--
Forest, in percent	95	85	53	—	--
Soils index, in inches	5.6	3.8	3.6	—	--
Latitude of gage, in decimal degrees	41.6006	41.5583	42.0697	42.0153	42.0422
Longitude of gage, in decimal degrees	71.0736	71.1297	70.9594	70.9617	70.8988
Precipitation, in inches	43.0	43.0	42.0	—	—
Precipitation intensity for 2-year recurrence interval, in inches	3.3	3.4	3.3	—	—
Snowfall, in inches	30	30	40	—	--
January minimum temperature, in degrees Fahrenheit	23	21	20	—	—

Table 3.—Basin characteristics for stream-gaging stations in the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound (Continued)

Basin characteristics	Station name and site number				
	Dorchester Brook at Brockton, Mass. (18)	Taunton River at Titicut near Bridgewater, Mass. (24)	Fall Brook near Middleborough, Mass. (27)	Taunton River at State Farm near Bridgewater, Mass. (30)	Snows Brook near Bridgewater, Mass. (31)
Area, in square miles	4.71	182	9.32	258	1.37
Slope, in feet per mile	33.3	—	—	4.84	30.3
Length, in miles	5.8	—	—	28.7	2.2
Elevation, in feet	194	—	—	100	80
Storage, in percent	11.3	—	—	8.91	16.7
Lake area, in percent	1.7	—	—	4.2	.39
Forest, in percent	68	—	—	72	88
Soils index, in inches	3.6	—	—	4.3	4.0
Latitude of gage, in decimal degrees	42.0614	41.9472	41.8653	41.9300	41.9481
Longitude of gage, in decimal degrees	71.0664	70.9369	70.9089	70.9500	70.9936
Precipitation, in inches	43.0	—	—	43.6	43.0
Precipitation intensity for 2-year recurrence interval, in inches	3.3	—	—	3.3	3.3
Snowfall, in inches	40	—	—	37	40
January minimum temperature, in degrees Fahrenheit	19	—	—	20	20

Table 3.—Basin characteristics for stream-gaging stations in the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound (Continued)

Basin characteristics	Station name and site number				
	Wading River at West Mansfield, Mass. (43)	Wading River near Norton, Mass. (47)	Threemile River tributary near Oakland, Mass. (51)	Threemile River at North Dighton, Mass. (53)	Segreganset River near Dighton, Mass. (54)
Area, in square miles	19.5	43.3	0.51	84.3	10.6
Slope, in feet per mile	—	10.7	13.5	12.3	9.95
Length, in miles	—	16.3	.99	27.1	6.70
Elevation, in feet	—	200	90	170	110
Storage, in percent	—	1.20	18.0	—	16.6
Lake area, in percent	—	.61	.0	1.7	.95
Forest, in percent	—	84	80	75	81
Soils index, in inches	—	4.5	4.5	4.5	4.3
Latitude of gage, in decimal degrees	42.0000	41.9500	42.9272	41.8661	41.8403
Longitude of gage, in decimal degrees	71.2606	71.1800	71.1547	71.1233	71.1433
Precipitation, in inches	—	43.5	43.0	44.0	44.0
Precipitation intensity for 2-year recurrence interval, in inches	—	3.2	3.3	3.3	3.3
Snowfall, in inches	—	40	40	42	41
January minimum temperature, in degrees Fahrenheit	—	18	19	20	20

Table 3.—Basin characteristics for stream-gaging stations in the Taunton and Ten Mile River basins and coastal basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound (Continued)

Basin characteristics	Station name and site number				
	Holloway Brook near Myricks, Mass. (55)	Quaker Brook near Myricks, Mass. (57)	Taunton River tributary near Fall River, Mass. (59)	West Branch Palmer River near Rehoboth, Mass. (63)	Runnins River at Seekonk, Mass. (66)
Area, in square miles	1.17	1.95	0.23	4.35	4.27
Slope, in feet per mile	33.3	16.4	69.6	17.5	11.1
Length, in miles	2.0	2.43	1.1	3.4	4.2
Elevation, in feet	—	.89	180	150	90
Storage, in percent	—	—	.40	13.9	24.4
Lake area, in percent	3.2	.02	.0	.46	.24
Forest, in percent	84	78	43	81	53
Soils index, in inches	3.3	4.1	4.4	4.7	4.2
Latitude of gage, in decimal degrees	41.8261	41.8247	41.7586	41.8794	41.4925
Longitude of gage, in decimal degrees	70.9903	71.0550	71.1169	71.2550	71.3333
Precipitation, in inches	43.0	43.0	43.0	43.0	44.0
Precipitation intensity for 2-year recurrence interval, in inches	3.3	3.3	3.3	3.3	4.2
Snowfall, in inches	36	37	35	35	39
January minimum temperature, in degrees Fahrenheit	23	19	21	19	21

Table 4.—Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations

Annual and monthly flow characteristics:
QA is the mean annual discharge
SDQA is the standard deviation of mean annual discharge
QM is the mean discharge for M calendar month, M = 1 for January where the top line is the maximum mean; the middle line is the mean; the bottom line is the minimum mean.
SDQM is the standard deviation of mean discharge for M calendar month

Low-flow characteristics:
7Q2 is the annual minimum 7-day mean discharge for 2-year recurrence interval
7Q10 is the annual minimum 7-day mean discharge for 10-year recurrence interval

Flow-duration characteristics:
DPT is the daily discharge, exceeded PT percent of the time, from the flow-duration curve

Years of record:
YRSDAY is the number of years of daily flow record for this analysis
YRSLOW is the number of years of low-flow record for this analysis

Flow	Station name and site number				
	Adamsville Brook at Adamsville, R.I. (6)	Matfield River at Elmwood, Mass. (13)	Poor Meadow Brook at South Hanson, Mass. (15)	Dorchester Brook at Brockton, Mass. (18)	Taunton River at State Farm near Bridgewater, Mass. (30)
ANNUAL					
QA	14.3	—	—	8.32	480
SDQA	3.66	—	—	2.35	128
MONTHLY					
Q10	23.2	61.6	30.0	3.86	902
	5.57	—	—	1.44	242
	.11	30.5	13.1	.20	42.7
SDQ10	5.99	—	—	1.16	219
Q11	42.3	90.6	35.5	17.5	1309
	13.6	—	—	7.61	457
	.87	78.1	23.5	.22	56.6
SDQ11	10.4	—	—	4.85	320
Q12	45.7	130	39.8	30.8	1524
	19.5	—	—	13.5	590
	2.02	63.1	27.2	.81	82.7
SDQ12	12.1	—	—	8.72	345

Table 4.--Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Adamsville Brook at Adamsville, R.I. (6)	Matfield River at Elmwood, Mass. (13)	Poor Meadow Brook at South Hanson, Mass. (15)	Dorchester Brook at Brockton, Mass. (18)	Taunton River at State Farm near Bridgewater, Mass. (30)
MONTHLY (Continued)					
Q1	49.1	109	37.4	17.2	1346
	20.7	—	—	9.96	652
	5.16	58	21.7	2.58	122
SDQ1	9.52	—	—	4.04	284
Q2	42.7	179	66.7	25.0	1314
	23.5	—	—	13.7	757
	8.15	104	36.5	7.78	339
SDQ2	8.42	—	—	4.79	247
Q3	54.0	199	71.2	33.1	1714
	29.2	—	—	19.7	972
	14.4	125	42.4	10.0	338
SDQ3	9.43	—	—	8.78	319
Q4	51.6	178	51.2	22.5	1579
	23.2	—	—	13.5	852
	6.76	137	42.9	4.94	192
SDQ4	10.3	—	—	5.56	333
Q5	38.4	71.8	20.5	22.0	1378
	17.3	—	—	9.95	555
	6.27	52.7	19.5	3.46	196
SDQ5	8.82	—	—	6.01	288
Q6	31.4	82.0	29.0	16.6	747
	8.83	—	—	5.34	287
	1.04	33.3	10.8	.73	93.8
SDQ6	6.79	—	—	4.89	165
Q7	17.0	96.4	30.5	11.20	654
	3.35	—	—	2.34	165
	.09	21.3	7.96	.12	36.4
SDQ7	6.79	—	—	4.89	165

Table 4.--Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Adamsville Brook at Adamsville, R.I. (6)	Matfield River at Elmwood, Mass. (13)	Poor Meadow Brook at South Hanson, Mass. (15)	Dorchester Brook at Brockton, Mass. (18)	Taunton River at State Farm near Bridgewater, Mass. (30)
MONTHLY (Continued)					
Q8	31.0	33.0	10.8	5.91	1049
	3.91	—	—	1.11	159
	.08	16.3	4.63	.02	29.3
SDQ8	6.08	—	—	1.76	191
Q9	27.1	57.4	16.9	4.61	659
	3.83	—	—	1.41	174
	.07	13.9	5.49	.04	32.9
SDQ9	6.95	—	—	1.76	159.1
LOW FLOW					
7Q2	.15	—	—	—	51.5
7Q10	.05	—	—	—	24.6
FLOW DURATION					
D99	.08	8.9	2.8	.02	27.7
D95	.1	11.8	4.0	.08	50.6
D90	.3	13.9	4.8	.17	66.6
D75	2.3	23.6	10.7	1.1	124
D70	3.4	27.8	12.7	1.7	159
D50	3.4	27.8	12.7	1.7	159
D25	19.0	121	39.5	10.7	681
D10	34.0	196	64.3	20.2	1080
YEARS					
YRSDAY	38	2	2	11	27
YRSLOW	37	—	—	—	26

Table 4.--Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Wading River at West Mansfield, Mass. (43)	Wading River near Norton, Mass. (47)	Threemile River at North Dighton, Mass. (53)	Segreganset River near Dighton, Mass. (54)	West Branch Palmer River near Rehoboth, Mass. (54)
ANNUAL					
QA	31.7	75.0	169	22.0	8.29
SDQA	9.83	21.1	43.7	5.86	2.68
MONTHLY					
Q10	70.3	143	238	42.7	8.06
	15.4	41.1	84.7	10.3	1.94
	1.00	3.11	18.7	.58	.31
SDQ10	17.5	40.5	76.5	11.4	2.40
Q11	107	210	376	58.4	26.1
	26.3	65.1	139	20.4	8.06
	1.34	5.21	35.9	4.69	.60
SDQ11	26.7	53.7	108	16.0	7.25
Q12	109	246	534	62.3	30.0
	38.6	92.8	220	32.3	13.5
	2.91	10.4	40.1	3.7	1.26
SDQ12	26.5	59.1	147	21.1	9.55
Q1	156	353	683	110	21.3
	47.4	111	250	36.1	10.0
	1.38	13.7	29.8	3.34	2.64
SDQ1	32.5	73.8	178	28.9	5.33
Q2	106	232	466	63.2	27.5
	46.3	108	234	33.1	14.1
	9.35	26.1	55.7	7.23	5.43
SDQ2	21.8	44.7	111	15.2	5.69
Q3	112	280	575	73.6	34.4
	67.3	160	346	47.0	19.1
	37.6	82.7	180	20.2	9.40
SDQ3	21.1	53.7	141	19.9	8.79

Table 4.--Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Wading River at West Mansfield, Mass. (43)	Wading River near Norton, Mass. (47)	Threemile River at North Dighton, Mass. (53)	Segreganset River near Dighton, Mass. (54)	West Branch Palmer River near Rehoboth, Mass. (54)
MONTHLY (Continued)					
Q4	105	229	419	50.0	22.5
	60.9	135	282	33.0	13.3
	17.8	40.5	129	16.5	4.89
SDQ4	23.7	48.6	85.9	12.2	6.16
Q5	79.3	178	408	61.7	23.8
	36.6	82.6	202	25.3	9.77
	12.9	28.6	83.4	7.87	2.99
SDQ5	17.5	39.9	93.6	16.4	5.97
Q6	73.4	158	3.45	37.8	17.5
	19.2	43.8	118	11.1	4.73
	4.55	9.79	33.8	1.51	4.73
SDQ6	14.9	32.1	83.2	9.45	4.90
Q7	27.7	67.1	137	24.9	10.6
	8.22	19.5	50.5	4.20	2.06
	1.36	3.57	12.8	.25	.11
SDQ7	6.97	17.2	37.2	6.13	3.22
Q8	87.0	175	155	35.3	5.89
	8.49	22.1	51.8	5.42	1.37
	.70	2.55	10.2	.08	.04
SDQ8	16.4	35.4	42.6	8.92	1.96
Q9	35.1	67.1	110	21.5	9.69
	6.43	19.3	47.3	5.00	2.08
	.68	2.88	13.5	.02	.09
SDQ9	7.16	17.3	32.2	6.12	3.15
LOW FLOW					
7Q2	1.3	4.4	18.1	.26	.05
7Q10	.38	2.2	9.4	.00	.00

Table 4.--Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Wading River at West Mansfield, Mass. (43)	Wading River near Norton, Mass. (47)	Threemile River at North Dighton, Mass. (53)	Segreganset River near Dighton, Mass. (54)	West Branch Palmer River near Rehoboth, Mass. (54)
FLOW DURATION					
D99	0.55	2.5	11.4	0.00	0.02
D95	1.4	4.2	18.5	.32	.08
D90	2.2	6.2	24.4	.66	.15
D75	5.7	16.3	46.9	3.0	.74
D70	7.4	22.0	58.0	4.4	1.5
D50	21.1	51.3	117	13.0	5.0
D25	48.2	106	223	26.7	10.1
D10	76.0	179	390	51.2	19.9
YEARS					
YRSDAY	27	27	15	15	12
YRSLOW	26	26	14	14	11

Table 5.—Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites

Number in figures 2 and 3	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		COASTAL RIVER BASINS OF RHODE ISLAND SOUND					
1	01105937	Shingle Island River near North Dartmouth, Mass.	Old Fall River Road	1957, 1972-74	8.59	<0.1	0.0
2	01105942	[1] Copicut River at Hixville, Mass.	Old Fall River	1957	8.68	—	—
3	01105943	[1] Shingle Island River at Hixville Road near North Dartmouth, Mass.	Hixville Road	1972-74	10.1	2.5	1.5
4	01105947	Bread and Cheese Brook at Head of Westport, Mass.	State Route 177	1972-74	9.26	.2	<.1
5	01105950	Kirby Brook near Head of Westport, Mass.	Drift Road	1965 1972-74	3.69	<.1	.0
7	01106005	Angeline Brook near Westport Point, Mass.	Cornell Road	1972-74	3.26	.1	.0
		TAUNTON RIVER BASIN					
8	01106460	Beaver Brook near East Bridgewater, Mass.	Belmont Street	1965-68	8.90	1.0	.3
9	01106470	[1] Matfield River at East Bridgewater, Mass.	Union Street	1966-67	30.9	12	5.3
11	01106490	Meadow Brook at Union Street at East Bridgewater, Mass.	100 feet north of Union Street	1967-68	6.22	.3	<.1
12	01106495	[3] Meadow Brook at East Bridgewater, Mass.	Central Street	1966-67	7.32	.9	<.1
13	01106500	[1] [2] Matfield River at Elmwood, Mass.	State Route 18	1965, 1978-81	40.5	—	—
14	01106800	Shumatuscacant River near Hanson, Mass.	Washington Street	1966-68	10.3	.2	<.1
15	01106900	[2] Poor Meadow Brook at South Hanson, Mass.	State Route 27	1965	14.6	—	—
16	01106910	Stump Pond outlet near Halifax, Mass.	Elm Street	1958-60, 1965	—	—	—

Table 5.—Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2 and 3	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		TAUNTON RIVER BASIN (Continued)					
17	01106920	[3] Satucket River at East Bridgewater, Mass.	100 feet downstream from mill	1966-67	34.8	4.6	1.3
19	01107050	Hockomock River near West Bridgewater, Mass.	State Road 106	1966-68	20.5	3.1	.9
20	01107070	West Meadow Brook near Brockton, Mass.	West Chestnut Street	1967-68	1.99	.2	<.1
21	01107100	[3] Town River at Bridgewater, Mass.	State Route 18	1966-67	55.6	9.2	2.7
22	01107150	Raven Brook near Halifax, Mass.	Wood Street	1966-68	3.58	1.4	.6
23	01107180	Winnetuxet River near Halifax, Mass.	River Street	1965-68	35.7	16	7.8
25	01107220	Fall Brook at East Freetown, Mass.	200 feet downstream from dam on Country Road	1966-68	13.1	1.5	.4
26	01107250	Black Brook near North Rochester, Mass.	100 feet upstream from Marion Road	1966	7.43	—	—
27	01107400	[2] Fall Brook near Middleborough, Mass.	Wood Street	1966-68, 1978-81	9.32	2.8	1.3
28	01107800	[1] Nemasket River near Middleborough, Mass.	Murdock Street	1965-67	69.4	12	4.2
29	01107900	Purchade Brook near Middleborough, Mass.	Plymouth Street	1957, 1966-67	3.07	1.2	.5
31	01108100	Snows Brook near Bridgewater, Mass.	Cross Street	1965	1.37	—	—
32	01108110	Snows Brook near North Middleborough, Mass.	Private road, 0.5 mile upstream stream from mouth	1966-68	2.64	.6	.2
33	01108140	Poquoy Brook near North Middleborough, Mass.	Vernon Street	1966-68	8.23	3.2	1.2
34	01108180	[3] Cotley River at East Taunton, Mass.	Middleboro Avenue	1966-68	7.53	1.2	.3
35	01108239	Dam Lot Brook at Warren Street near Taunton, Mass.	Warren Street	1957	—	—	—

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2 and 3	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		TAUNTON RIVER BASIN (Continued)					
36	01108240	Dam Lot Brook near Taunton, Mass.	South Street West	1966-68	2.97	0.4	0.1
37	01108280	Forge River near Taunton, Mass.	South Street West	1966-68	9.23	2.6	1.0
38	01108300	Canoe River at East Foxborough, Mass.	Private road	1966-68	1.62	.2	<.1
39	01108320	[1] Canoe River near Norton, Mass.	Plain Street	1965-68, 1978-81	18.3	1.3	.4
40	01108340	Poquanticut Brook near North Easton, Mass.	Chestnut Street	1966-68	4.46	.3	.2
41	01108360	[3] Mulberry Meadow Brook near Norton, Mass.	Plain Street	1966-67	12.0	1.2	.6
42	01108400	[1] [3] Mill River near Taunton, Mass.	Whittenton Street	1966-67	41.1	5.2	2.7
44	01108600	Hodges Brook at West Mansfield, Mass.	Oak Street	1966-68	3.72	<.1	<.1
45	01108790	Chartley Brook near Attleboro, Mass.	Wilmarth Street	1967-68	1.40	.2	<.1
46	01108800	[3] Chartley Brook at Chartley, Mass.	100 feet downstream from Chartley Pond outlet	1966-67	6.46	.8	.4
48	01109020	Rumford River at East Foxborough, Mass.	Unnamed road upstream from Cocasset Street	1966-68	5.09	.6	.3
49	01109030	[1] Robinson Brook at Mansfield, Mass.	State Route 140	1966-68	2.60	.4	.2
50	01109040	Rumford River at Norton, Mass.	State Route 123	1965	—	—	—
51	01109050	Threemile River tributary near Oakland, Mass.	State Route 140	1965	.51	—	—
52	01109055	Threemile River near Taunton, Mass.	State Route 44	1965	81.4	—	—
56	01109080	Assonet River near Assonet, Mass.	State Route 79	1966-68	16.3	3.0	1.0

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2 and 3	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		TAUNTON RIVER BASIN (Continued)					
58	01109090	Rattlesnake Brook near Assonet, Mass.	South Main Street	1957, 1966-68	4.23	0.4	<0.1
59	01109100	Taunton River tributary near Fall River, Mass.	North Main Street	1966-68	.23	<.1	<.1
		COASTAL RIVER BASINS OF MOUNT HOPE BAY					
60	01109130	Lewin Brook at Swansea, Mass.	Stevens Road	1972-74	2.91	<.1	.0
61	01109135	Cole River near Swansea, Mass.	Hortonville Road	1972-74	7.80	<.1	.0
		COASTAL RIVER BASINS OF NARRAGANSETT BAY					
62	01109195	East Branch Palmer River at Rehoboth, Mass.	State Route 118	1972-74	12.3	.2	.1
64	01109215	Palmer River near Rehoboth, Mass.	Summer Street	1972-74	26.8	1.5	.6
65	01109225	Rocky Run near Rehoboth, Mass.	Davis Street	1972-74, 1979-81	7.37	<.1	.0
66	01109270	Runnins River at Seekonk, Mass.	Pleasant Street	1972-74	4.27	.2	<.1
		TEN MILE RIVER BASIN					
67	01109370	Bungay River at Attleboro, Mass.	0.6 mile upstream from mouth	1965	—	—	—
68	01109375	Bungay River at Attleboro, Mass.	0.5 mile upstream from mouth	1937	7.3	—	—
69	01109380	Ten Mile River at Attleboro, Mass.	State Route 123	1937	19.6	—	—
70	01109385	Ten Mile River downstream from dam at Hebronville, Mass.	300 feet downstream from dam	1937	27.6	—	—
71	01109390	Ten Mile River at railroad bridge at Hebronville, Mass.	Railroad bridge	1965	27.7	—	—
72	01109403	Ten Mile River at Pawtucket Avenue, East Providence, R.I.	Pawtucket Avenue	1970	53.1	—	—

[1] Diversion to or from basin.
[2] Operated as continuous record station, see table 2.
[3] Regulated flow.

SELECTED REFERENCES

Benson, M. A., 1962, Factors influencing the occurrence of floods in a humid region of diverse terrain: U.S. Geological Survey Water-Supply Paper 1580-B, 64 p.

Brackley, R. A., and Wandle, S. W., Jr., 1983, Drainage divides, Massachusetts--Ipswich and lower Merrimack River basins: U.S. Geological Survey Open-File Report 83-209, 28 maps.

Halliwell, D. B., Kimball, W. A., and Screpetis, A. J., 1982, Massachusetts stream classification program, part I, Inventory of rivers and streams: Massachusetts Department of Environmental Quality Engineering and Department of Fisheries, Wildlife, and Recreational Vehicles, 126 p., appendix consisting of 3 pages.

Higgins, G. R., 1967, Yield of streams in Massachusetts: Amherst, Massachusetts, University of Massachusetts, Water Resources Research Center Publication 5, 175 p.

Hutchison, N. E., compiler, 1975, WATSTORE--National water data storage and retrieval system of U.S. Geological Survey--User's guide: U.S. Geological Survey Open-File Report 75-426, 791 p. (revised).

Johnson, C. G., 1970, A proposed streamflow data program for central New England: U.S. Geological Survey open-file report, 38 p., 1 appendix consisting of 11 pages.

Johnson, C. G., and Tasker, G. D., 1974, Progress report on flood magnitude and frequency of Massachusetts streams: U.S. Geological Survey Open-File Report 74-131, 41 p.

Knox, C. E., and Nordenson, T. J., 1955, Average annual runoff and precipitation in the New England-New York area: U.S. Geological Survey Hydrologic Investigations Atlas 7, 6 p.

Knox, C. E., and Soule, R. M., 1949, Hydrology of Massachusetts, part 1, Summary of streamflow and precipitation records: U.S. Geological Survey Water-Supply Paper 1105, 240 p.

Langbein, W. B. and Iseri, K. T., 1960, General introduction and hydrologic definitions, in Manual of hydrology, part 1, General surface-water techniques: U.S. Geological Survey Water-Supply Paper 1541-A, p. 1-29.

Langbein, W. B., and others, 1947, Topographic characteristics of drainage basins: U.S. Geological Survey Water-Supply Paper 968-C, p. 125-157.

Lautzenheiser, R. E., 1969, Snowfall, snowfall frequencies, and snow cover data for New England: Environmental Sciences Services Administration Technical Memorandum EDSTM 12, 15 p.

Male, J. W., and Ogawa, H., 1982, Low flows of Masssachusetts streams: Amherst, Massachusetts, University of Massachusetts, Water Resources Research Center Publication 125, 152 p.

Meeks, W. C., 1977, Daily values statistics (program A969), in Hutchison, N. E., compiler, 1975, WATSTORE--National water data storage and retrieval system of the U.S. Geological Survey user's guide: U.S. Geological Survey Open-File Report 75-426 (revised), chap. IV, section G.

Price, W. E., Jr., and Meeks, W. C., 1977, Daily values monthly and annual statistics (program W4422), in Hutchison, N. E., compiler, 1975, WATSTORE--National water data storage and retrieval system of the U.S. Geological Survey user's guide: U.S. Geological Survey Open-File Report 75-426 (revised), chap. IV, section F.

Riggs, H. C., 1971, Discussion of probability distribution of annual droughts by Eratakulan S. Joseph: American Society of Civil Engineers Proceedings, v. 97, no. IR3, p. 540-541.

_____1972, Low-flow investigations: U.S. Geological Survey Techniques of Water-Resources Investigations, book 4, chap. B1, 18 p.

Thomas, D. M., and Benson, M. A., 1970, Generalization of streamflow characteristics from drainage-basin characteristics: U.S. Geological Survey Water-Supply Paper 1975, 55 p.

U.S. Department of Agriculture, 1972, Soil Conservation Service National Engineering Handbook, section 4, Hydrology: U.S. Department of Agriculture, Soil Conservation Service.

U.S. Federal Inter-Agency River Basin Committee, Subcommittee on Hydrology, 1951, Interagency coordination of drainage area data, notes on hydrologic activities: Water Resources Council, Subcommittee on Hydrology Bulletin no. 4, 48 p.

U.S. Geological Survey, 1977, National handbook of recommended methods for water-data acquisition: U.S. Geological Survey, chap. 7, 38 p.

_____1980, Water resources data for Massachusetts and Rhode Island, water year 1979: U.S. Geological Survey Water-Data Report MA-RI-79-1, 349 p.

U.S. Weather Bureau, 1959a, Climates of the states, Massachusetts: U.S. Weather Bureau, Climatography of the United States, Paper No. 60-19, 20 p.

_____1959b, Rainfall intensity-frequency regime, northeastern United States: U.S. Weather Bureau Technical Paper no. 29, 35 p.

Wandle, S. W., Jr., 1982, Estimating peak discharges of small, rural streams in Massachusetts: U.S. Geological Survey Open-File Report 80-676, 33 p.

_____1983, Low-flow frequency and flow-duration analysis of natural-flow streams in Massachusetts: Boston Society of Civil Engineers Section, American Society of Civil Engineers Journal, v. 69, no. 1, p. 87-110.

_____1984a, Gazetteer of hydrologic characteristics of streams in Massachusetts--coastal river basins of the North Shore and Massachusetts Bay: U.S. Geological Survey Water-Resources Investigations Report 84-4281.

_____1984b, Gazetteer of hydrologic characteristics of streams in Massachusetts--Connecticut River basin: U.S. Geological Survey Water-Resources Investigations Report 84-4282.

_____1984c, Gazetteer of hydrologic characteristics of streams in Massachusetts--Hudson River basin: U.S. Geological Survey Water-Resources Investigations Report 83-4250.

Wandle, S. W., Jr., and Fontaine, R. A., 1984, Gazetteer of hydrologic characteristics of streams in Massachusetts--Merrimack River basin: U.S. Geological Survey Water-Resources Investigations Report 84-4284.

Wandle, S. W., Jr., and Frimpter, M. H., 1982, Drainage divides, Massachusetts--Taunton River basin and Southeast Coastal basins: Geological Survey Open-File Report 82-870, 24 maps.

Wandle, S. W., Jr., and LeBlanc, J. A., 1984, Gazetteer of hydrologic characteristics of streams in Massachusetts--Thames River basin: U.S. Geological Survey Water-Resources Investigations Report 84-4287.

Wandle, S. W., Jr., and Lippert, R. G., 1984, Gazetteer of hydrologic characteristics of streams in Massachusetts--Housatonic River basin: U.S. Geological Survey Water-Resources Investigations Report 84-4285.

Wandle, S. W., Jr., and Morgan, M. A., 1984, Gazetteer of hydrologic characteristics of streams in Massachusetts--coastal river basins of the South Shore and Buzzards Bay: U.S. Geological Survey Water-Resources Investigations Report 84-4288.

Wandle, S. W., Jr., and Phipps, A. F., 1984, Gazetteer of hydrologic characteristics of streams in Massachusetts—Blackstone River basin: U.S. Geological Survey Water-Resources Investigations Report 84-4286.

Willey, R. E., Williams, J. R., and Tasker, G. D., 1978, Water resources of the coastal drainage basins of southeastern Massachusetts, Westport River, Westport to Seekonk: U.S. Geological Survey Hydrologic Investigations Atlas HA-275.

_____1983, Hydrologic data of the coastal drainage basins of southeastern Massachusetts, Narragansett Bay, and Rhode Island Sound: U.S. Geological Survey Open-File Report 83-145, Massachusetts Hydrologic-Data Report No. 25, 42 p., 1 pl.

Williams, J. R., and Willey, R. E., 1970, Taunton River basin: U.S. Geological Survey open-file report, Massachusetts Basic-Data Report 12, Ground Water Series, 102 p., 1 pl.

Williams, J. R., Farrell, D. F., and Willey, R. E., 1973, Water resources of the Taunton River basin, southeastern Massachusetts: U.S. Geological Survey Hydrologic Investigations Atlas HA-460.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1985--501-445--20,016

-NOTES-